

Mr. Kevin Bilash USEPA Region III Land, Chemicals & Redevelopment Division 3LD20 1650 Arch Street Philadelphia, PA 19103 July 29, 2022 File No. 4862.04

Re: Marcus Hook Industrial Complex

Monthly Progress Report - July 2022

Area of Interest 7 Marcus Hook, PA

Dear Mr. Bilash:

This monthly progress report is being submitted on behalf of the Evergreen Resource Management Operations (Evergreen) for AOI 7 at the Marcus Hook Industrial Complex (MHIC) in Marcus Hook, Pennsylvania. On December 9, 2021, a Revised Interim Measures (IM) Workplan was submitted to the United States Environmental Protection Agency (USEPA) to address arsenic in the subsurface at AOI 7. The IM Workplan was approved by the USEPA on February 15, 2022. The discussion below provides an update on IM predesign investigation (PDI) activities.

Activities completed this reporting period

No field activities were completed during this reporting period (July 2022). The activities which were completed include data validation and the Bench Scale Treatability Study activities that occurred in the treatability lab at Terra Systems, Inc. (Terra Systems) in Claymont, Delaware. Details for these activities are presented below. Note that the results of the treatability testing will be submitted in a future progress report once the Bench Scale Treatability Study is completed.

- Data validation was completed on all groundwater samples collected during the May 2022 groundwater sampling event for dissolved arsenic and iron. The validated data is included as Table 1 attached.
- Treatability study samples from the reagent screening tests (calcium polysulfide, ion exchange resin, hydrated lime, and FerroBlack) for the following soil/well pairs were sent to SGS North America Inc. in Dayton, NJ for analysis of dissolved arsenic (aqueous) verification:
 - □ A0I7-BH-22-001 soil and MW-56D groundwater
 - □ MW-609D soil and MW-609D groundwater
 - □ MW-608D soil and MW-608D groundwater
- Reagent screening activities were completed for the following soil/well pairs in accordance with the IM Workplan:

- □ MW-560D soil and MW-560D groundwater
- □ MW-608D soil and MW-606S groundwater

Activities planned for the next reporting period

The activities planned for the next reporting period (August 2022) include continuing the Bench Scale Treatability Study activities, as described in the Revised IM Workplan.

Deviation from approved activities this reporting period

There were no deviations from the approved activities for this reporting period.

Deviation from approved schedule

There were no schedule deviations during this period. The schedule for the major milestones is provided below and the detailed schedule is included in Attachment A.

Task	Schedule
PDI Activities	3/2022 - 5/2022
Bench Scale Treatability	5/2022 - 8/2022
Testing	
Pilot Testing	8/2022 - 11/2022
IM Performance Monitoring	10/2022 - 11/2023

Very truly yours,

SANBORN, HEAD & ASSOCIATES, INC.

Colleen Costello, PG Senior Vice President

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ATTACHMENTS

Attachment A – Interim Measures Implementation Schedule Table 1 – Summary of Metals Analytical Results - Groundwater

Attachment A

Updated Interim Measures Implementation Schedule Evergreen Marcus Hook, Pennsylvania

Task Name	Start	Finish	Q4	Q1	Q2		Q3		Q4		Q1		Q2		Q3	Q4	4
												Mar					
Submit IM Workplan to EPA	12/09/21	12/09/21	ē,														
EPA Approval of IM Workplan	12/10/21	02/15/22	Ė	\rightarrow													
Monthly Report to EPA	01/31/22	08/31/23															
January 2022 Monthly Report	01/31/22	01/31/22		ā													
February 2022 Monthly Report	02/28/22	02/28/22															
March 2022 Monthly Report	03/31/22	03/31/22															
April 2022 Monthly Report	04/29/22	04/29/22															
May 2022 Monthly Report	05/31/22	05/31/22															
June 2022 Monthly Report	06/30/22	06/30/22															
July 2022 Monthly Report	07/29/22	07/29/22															
August 2022 Monthly Report	08/31/22	08/31/22															
September 2022 Monthly Report	09/30/22	09/30/22															
October 2022 Monthly Report	10/31/22	10/31/22															
November 2022 Monthly Report	11/30/22	11/30/22															
December 2022 Monthly Report	12/30/22	12/30/22															
January 2023 Monthly Report	01/31/23	01/31/23															
February 2023 Monthly Report	02/28/23	02/28/23															
March 2023 Monthly Report	03/31/23	03/31/23															
April 2023 Monthly Report	04/28/23	04/28/23															
May 2023 Monthly Report	05/31/23	05/31/23															
June 2023 Monthly Report	06/30/23	06/30/23															
July 2023 Monthly Report	07/31/23	07/31/23															
August 2023 Monthly Report	08/31/23	08/31/23															
PDI	03/07/22	06/30/22															
PDI Mobilization	03/22/22	05/31/22															
Sediment and Porewater Sampling	03/22/22	05/31/22															
Field Mobilization	03/22/22	03/22/22															
Collection of sediment samples and grab porewater samples	03/22/22	03/25/22															
Collection of DGT porewater samples	03/22/22	03/23/22															
Laboratory Data Analysis	03/28/22	04/29/22															
Data Validation	04/26/22	05/10/22															
Data Evaluation	04/18/22	05/31/22															
GW Elevation and GW Flow Evaluation	03/25/22	06/30/22															
Installation of Transducers	04/08/22	04/08/22															
Deployment of Groundwater Flow Meter	05/24/22	05/24/22															
Install stilling well	03/25/22	03/25/22															
Data Collection	04/08/22	05/27/22															
Data Evaluation	05/27/22	06/30/22															
Monitoring Well Installations, Soil Borings and Soil Sampling	03/07/22	06/30/22															
Obtain Access to Honeywell Property	03/07/22	05/09/22															

Attachment A

Updated Interim Measures Implementation Schedule Evergreen Marcus Hook, Pennsylvania

Task Name	Start	Finish		Q4		Q1		Q2		Q3			Q4		Q1		Q2		Q3		Q4
																				Oct I	
Delaware Well Permits	03/21/22	04/01/22																			
Utility Clearance	03/25/22	03/25/22																			
Soil Borings, Well Installations and Soil Sampling	04/04/22	05/13/22																			
Laboratory Data Analysis	04/11/22	05/27/22																			
Data Validation	05/27/22	06/10/22																			
Well Development	04/07/22	05/13/22																			
Well and Boring Survey	05/24/22	05/24/22																			
Data Evaluation	04/11/22	06/30/22																			
Groundwater Sampling	05/24/22	06/30/22																			
Groundwater Sampling	05/24/22	05/27/22																			
Laboratory Data Analysis	05/27/22	06/10/22																			
Data Validation	06/10/22	06/23/22																			
Data Evaluation	06/10/22	06/30/22																			
Bench Scale Treatability Test	05/31/22	09/02/22																			
Baseline Characterization	05/31/22	06/13/22									,										
Titration Test	06/10/22	06/13/22																			
Reagent Screening	06/14/22	07/15/22																			
Test Setup	06/14/22	06/14/22																			
Initial Test	06/17/22	06/21/22																			
Modification Test (If Needed)	06/30/22	07/13/22																			
Evaluation	07/11/22	07/15/22																			
Rebound Test	07/18/22	08/19/22																			
Reactor Setup	07/18/22	07/18/22																			
First Sampling and Replenishing	07/25/22	07/10/22																			
Second Sampling and Replenishing	08/01/22	08/01/22							-												
Final Sampling	08/08/22	08/08/22																			
Evaluation	08/08/22	08/19/22	_																		_
		09/02/22								1											
Bench-scale Study Report	08/22/22	10/11/23																			
Pilot Test	09/05/22	_																			
Pilot Study Design	09/05/22	09/26/22																			
Pilot Study Implementation	09/27/22	11/21/22	_																		
Permit	09/27/22	10/17/22										1									
Injection Preparation	10/18/22	10/31/22											1								
Injection Activities	11/01/22	11/21/22																			
Pilot Study Monitoring	11/01/22	10/11/23																			
Baseline Sampling	11/01/22	11/03/22	_																		
First Performance Monitoring	01/09/23	01/11/23																			
Second Performance Monitoring	04/10/23	04/12/23																			
Third Performance Monitoring	07/10/23	07/12/23																			
Fourth Performance Monitoring	10/09/23	10/11/23																			
- CMS	10/16/23	11/20/23																			
Design of Final Remedy	10/16/23	11/17/23																			
Submittal of CMS	11/20/23	11/20/23																			

Table 1
Summary of Arsenic and Iron Analytical Results - Groundwater
AOI 7, Marcus Hook Industrial Complex (MHIC)

Location	Sample Date	Sample Type	Arsenic μg/L	lron μg/L
	ı	JSEPA MCL	10	NS
	Ground	water PRG	1,253	NS
MW-531L	5/25/2022	N	202,000	45,600
MW-532L	5/25/2022	N	1,430,000	60,300
MW-532L	5/25/2022	FD	1,380,000	51,700
MW-559D	5/26/2022	N	297	41,500
MW-560D	5/26/2022	N	14,600	52,800
MW-56D	5/25/2022	N	386,000	115,000
MW-606D	5/25/2022	N	636,000	319,000
MW-607D	5/26/2022	N	111,000	56,500
MW-608D	5/24/2022	N	494,000	73,600
MW-609D	5/24/2022	N	633,000	108,000
Equipment Blank	5/26/2022	EB	11.3	<100

Notes:

- 1. Samples were collected by Sanborn Head personnel on the dates indicated and were analyzed by SGS North America, Inc. (SGS) of Dayton, New Jersey for dissolved arsenic and iron by United States Environmental Protection Agency (USEPA) Method 6010D. A sample type of "N" indicates a normal sample. A sample type of "FD" indicates a field duplicate sample. A sample type of "EB" indicates an equipment blank sample.
- 2. "USEPA MCL" are from the United States Environmental Protection Agency (EPA) website. The Maximum Contaminant Level (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards for drinking water systems.
- 3. "Groundwater PRG" is the preliminary remediation goal (PRG) for dissolved arsenic in groundwater developed by Honeywell International, Inc. (Honeywell) for the protection of porewater.
- 4. Bolded values indicate an exceedance of the USEPA MCL.
 - Gray shaded values indicate an exceedance of the Groundwater PRG.
 - $^{"}<"$ indicates the analyte is not detected above laboratory reporting limits.
 - "NS" indicates no standard.
 - "μg/L" indicates micrograms per liter.
- 5. Data validation was performed on the samples provided in this table by Environmental Standards, Inc. of Valley Forge, Pennsylvania. All results are considered acceptable. Refer to the Data Validation Summary Reports for further details.